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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/060,068

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Ubaldo Mastromatteo

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EXAMINER

RAO, SHRINIVAS H

ART UNIT

PAPER NUMBER

2814

DATE MAILED: 04/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/060,068

Applicant(s)

MASTROMATTEO, UBALDO

Examiner

Steven H. Rao

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 February 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 13-20 and 27-54 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 13-20, 27-54 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Amendment

Applicants' amendment filed on has been forwarded on February 09, 2005. Therefore claims 13,16,18, 38 , 42 ,43 44,45 as amended by the amendment and claims 14-15,17,19,20,27-37,39-41 and presently newly added claims 46 to 54 are currently pending in the Application.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-20,34-54 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Applicants' have attempted to amend the specification and claims to change spacing region to body . This was not disclosed in the specification as originally filed.

Further Applicants' in previous arguments have interpreted element 21 of their drawings as spacing region and present claim 13 defines it as " body region". It is noted that element 21 does undergo any processing to get desired shape whereas element 20 spacer does so.

Therefore it completely changes the description and scope of claims for which support is not found in the original specification.

Appropriate corrections by canceling the attempted additions is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 13,-18, 27-30, 42 to 46 and 52-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Chao et al. (U.S. Patent .NO. 5,633,535 herein after Chao).

With respect to claims 13, 27, 42 to 46 Chao describes a device formed by a first body of semiconductor material (Chao 10) and a second body welded together through a mechanical and electrical connection structure, (Chao 20) comprising: an electrically conductive region welded between said first body (Chao fig. 5 # 42 conductive region, # 10 -first body) and said second body (fig. 5 # 20 -second body) ; and a spacing region arranged near said electrically conductive region and surrounding an active region .(fig. 5 # 40, col. 4 line 33) the spacer defining an enclosed space between the first and second bodies (or surrounding more than half of an active region, or at least two contiguous sides of an active region) (or surrounding at least three sides an active region) (Chao figs. 6-8 etc. 40 defining enclosed space between them).

With respect to claims 14 and 28 Chao describes the device according to claim 13, wherein said electrically conductive region is of a low-melting eutectic material.

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With respect to claim 15 describes the device according to claim 14, wherein said low-melting eutectic material is formed by alternating layers of gold and tin.

With respect to claims 16 Chao describes the device according to claim 13, wherein said spacing region is of dielectric material. (Chao col. 4 lines 40 to 65)

With respect to claim 17 Chao describes the device according to claim 16, wherein said dielectric material is chosen from among a spun polymer, such as SUB, polyimide, a composite material formed by laminated polymer layers, such as a photosensitive stick foil, and oxynitrides. (Chao col. 66-67).

With respect to claims 18 and 46 Chao describes the device according to claim 13, wherein said spacing region forms a delimiting cavity surrounding said electrically conductive region. (Chao figure 6, etc.)

With respect to claim 29 Chao describes the device of claim 27 wherein the first and second metal regions and the connection structure are formed within the enclosed space defined by the spacer . (Chao figure 6, etc., 42 metal regions and connection structure 43 are formed within space defined by spacers 40).

With respect to claim 30 describes the device of claim 27 wherein a micromechanical structure is formed within the enclosed space defined by the spacer . (Chao figures 4 A and B, 6 etc. pad of substrate having printed circuit board).

Claim 52 is rejected for reasons set out claim 52 above.

Claim 53 is rejected for reasons stated under claims 13 and 18 above .

Claim 54 is rejected for reasons set out under claim 18 above.

Claim Rejections - 35 USC # 1 03

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action.

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 19-20 and 31,47-48 and 50 are rejected under 35 U.S. C. 103 over Chao et al. (U.S. Patent No. 5,633,535, herein after Chao) as applied to claims 13-18 , etc. above and further in view of Yew et al. (U.S. Patent No. 6,137,164, herein after Yew).

With respect to claim 19, Chao describes the device according to claim 13. Chao does not specifically describe the device comprising a metal region which extends on top of said second body and beneath said electrically conductive region.

However Yew in figures 5,8 etc. describes metal regions extending on top of second body and beneath the electrically conductive region to form interconnections to perimeter vias for a first and second integrated chip of different sizes and functions and to form self aligned plural bodies during bonding.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Yew's metal regions extending on top of second body and beneath the electrically conductive region in Chao's device So form interconnections to

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the perimeter vias for a first and second integrated chip of different sizes and functions and to form self aligned plural bodies during bonding. (yew col. 4 lines 8 to 15).

With respect to claim 20 describes the device according to claim 19, wherein said welding region and said metal region are of a material chosen from among titanium, gold and nickel. (well known in the art).

With respect to claim 31 describes the device of claim 27 wherein the first body of semiconductor material is formed of quartz. (well known in the ad).

Claims 32-38, 49 to 51 are rejected under 35 U.S. C. 103 over Chao et al. (U.S. Patent No. 5,633,535, herein after Chao) and Yew et al. (U.S. Patent No. 6,137.164, herein after Yew) as applied to the claims above and further in view of Duboz et al. (U.S. Patent No. 5,726, 500 herein after Duboz).

With respect to claim 32 Chao and Yew describe the device of claim 31 Chao and Yew do not specifically describe the device further comprising a mirror formed on a second surface of the first body.

However Duboz in col.4 lines 29-32, etc. describes the device further comprising a mirror formed on a second surface of the first body as pad of the photo sensitive element of the photodiode when the electronic circuit forma part of an infrared detector, etc.

Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to include Duboz's device including the mirror in Chao and Yew's device to form the photo sensitive element of the photodiode when the electronic circuit forma pad of an infrared detector, etc. (Duboz col. 4 lines 29-32, col. 5 lines 45-50).

With respect to claims 33 and 49 describes the device of claim 31, further comprising a diffractive lens formed on the second surface of the first body. (Duboz col. 5 lines 10-17) .

With respect to claims 34-36, 47-48, 50 Chao describes the device of claim 31 wherein it comprises an electromechanical (Chao 42), fluid (Duboz col. 5 lines 10-17). and optical system (Duboz in col.4 lines 29-32).

With respect to claim 37, Chao describes the device of claim 36, further comprising a mirror formed on a surface of the first body opposite the optical structure. (Duboz col. 4 lines 29-32) .

With respect to Claim 28, Chao describes the device of claim 36 , further comprising a third body (Chao figqres 4 5, third 42) welded to first body (welded to 10) adjacent to the second body (42 adjacent to second 42) and a spacing region formed between the first and third bodies and surrounding an additional active region. (figures 4 , 5) .

With respect to claim 39 the device of claim 38 further comprising first and second mirrors formed on opposite faces of the first body. (Duboz figure 5)

With respect to claim 40 , Chao describes the device of claim 13, wherein the first and second bodies are wafers of semiconductor material. (Duboz figure 1 10-GaAs, Is-silicon).

With respect to claim 41 , Chao describes the deice of claim 13, wherein the spacing region completely surrounds the active region. (Chao, Yew fig 4a, 6A etc.) .

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With respect to claim 51, wherein the light producing component is a LED (Duuboz col. 5 line 49, etc.) .

Response to Arguments

Applicant's arguments filed 09/01/04 have been fully considered but they are not persuasive for the following reasons :

Applicants' first contention that Examiner acknowledges Choa's pedestals 40 cannot be interpreted as being anything other than simple spacers of an undefined shape and that no single one of them could be thought of as defining a region outside its own dimensions is completely at odds with the examiners position which was previously stated and reproduced below.

Applicants' first contention that Chao does not teach a spacing region surrounded by active is rejected for reasons set out in the rejection above and incorporated here by reference.

Further in is noted that current case law states, " that if the reference includes additional structures not required by Applicants, invention, it must be noted that the applied references discloses the invention as claimed . the fact that it discloses additional structures not claimed is irrelevant.

Applicants' contention w.r.t claims 18 and 27 that Chao does not disclose "delimiting cavity " or " enclosed space" is not persuasive because similar to delimiting cavity 22 in Applicants' figures Chao figure 6 discloses delimiting cavity and enclosed space (Chao figures 6 to 8 etc.).

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Chao and the applied references also disclose micromechanical structure.

Applicants' further contention are also not persuasive for that the term "surrounding" should be interpreted as substantially or at least partially surrounds a region ". Is not persuasive because the same term cannot be used to provide different coverage in claims.

As the claims must be given the broadest possible interpretation the term "surrounding will be interpreted to mean " at least partially surrounds a region."

Applicants' contention.that Chao does not a spacing region surrounding an active region is not persuasive because according to above definition of " surrounding "

(at

least padially surrounds a region) it is clear from Choa figures (5-8 etc. that spacing

region 40 at least padially surrounds a podion of the l/c (active region) of 10).

Applicants' have misunderstood and overstated,the Examiner's position.

It is hoped the following explanation (provided for the second tiem) is senough for Applicants' to understand. It is noted that the Examinet's position need to be clear to one skilled in the art and need not be explained until each and every Applicant understands it.

Applicants' are reminded that alleged distinguishing features must be recited in the claims to be given patentable weight. Applicants' defination from specification cannot be imprted into claims when the same are not recited in the claims .

With respect to claim 27 Applicants' allege that Chao does not teach " a spacer

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defining an enclosed space between first and second bodies is not persuasive because Choa in figures 6-8 describes an enclosed between spacers 40 and first and second bodies 10 and 20.

With respect to claims 31-33 Duboz in col. 4 lines 20-40 and col. 5 lines 35-55 describes infrared detectors and photosensitive materials and conductors transparent at the wavelength detected must be used all indiate that bodies of transparent material including glass, quartz common form of glass) etc are used.

Further Duboz teaches several substrates including GaAs, hybrid, InP , HgCdTe, PBTc etc. Therefore all of Applicants' arguments are not considered persuasive.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is (703) 3065945. The examiner can normally be reached on 8.00 to 5.00.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Steven H. Rao

Patent Examiner

April 16, 2005.



PHAT X. CAO
PRIMARY EXAMINER